

97-84147-10

Schweitzer, Hugo

The present and future  
peril to our commerce...

[New York]

[1914?]

97-84147-10

MASTER NEGATIVE #

COLUMBIA UNIVERSITY LIBRARIES  
PRESERVATION DIVISION

## BIBLIOGRAPHIC MICROFORM TARGET

ORIGINAL MATERIAL AS FILMED - EXISTING BIBLIOGRAPHIC RECORD

308

Z

Box 599 Schweitzer, Hugo

The present and future peril to our commerce  
and industry, by Hugo Schweitzer ... (New York,  
1914?;cover-title, 13 p. 20 $\frac{1}{2}$ cm.

Specimen of unspun nettle fibre pasted on cover.

379542

RESTRICTIONS ON USE: Reproductions may not be made without permission from Columbia University Libraries.

## TECHNICAL MICROFORM DATA

FILM SIZE: 35mmREDUCTION RATIO: 10:1IMAGE PLACEMENT: IA (IIA) IB IIBDATE FILMED: 7/28/97INITIALS: TLM

TRACKING # : \_\_\_\_\_

26072

FILMED BY PRESERVATION RESOURCES, BETHLEHEM, PA.

1914 Dec. 30.

# *The* **Present and Future Peril to Our Commerce and Industry**

---

BY

**HUGO SCHWEITZER, Ph.D.**

Past President, Chemists Club of New York City; late Secretary, New York  
Section, Society of Chemical Industry of Great Britain; ex-Chairman  
Verein Deutscher Chemiker, New York City; Member  
American Chemical Society

*With Author's Compliments*

308

Z

Box 599

Specimen of  
Unspun NETTLE Fibre

gift  
W. W. Reddwell

9-1-48

## THE PRESENT AND FUTURE PERIL TO OUR COMMERCE AND INDUSTRY

By DR. HUGO SCHWEITZER

EVEN to the superficial observer of current events it must be apparent that Great Britain indeed "rules the sea," for her warships have put an effective end to all maritime commerce of the enemy. The German and Austrian merchant marines have disappeared from the seas, and as we have practically no merchant marine of our own, the United States is sustaining irretrievable losses. The cotton, copper, petroleum, etc., which supplied the German and Austrian factories with raw materials, as well as our food stuffs, cannot be carried to these countries so that to-day our commerce and our industries are suffering as much as if we were at war ourselves.

It is the object of this paper to show specifically some instances of the great losses which we are sustaining owing to interference with our trade, and to point out some of the perils which threaten our export trade with Germany and Austria in the future, when necessity will compel these countries to depend upon their own resources and to so develop their industries that they will be able to dispense with many articles which up to the present time were supplied by us in large quantities.

**COTTON.** Of the total amount of merchandise exported from here to Germany to the value of about \$352,000,000, \$175,000,000 consists of raw cotton. Germany has been making successful attempts to raise cotton in her colonies, and in 1913 she imported altogether 3,500,000 pounds from there, but this supply is of no use during war time, as it cannot be transported into Germany. As cotton itself, on account of climatic conditions, does not grow in any part of Germany or Austria-Hungary, substitute fibres, which can be cultivated on domestic soil, must be made available. Plants which give excellent fibres and grow in substantially every section of Germany and Austria-Hungary are flax, hemp and the various species of nettle.

Up to now the substitution of these fibres for cotton has not made any great commercial progress, mainly for the reason that the method for the production of the fibres was defective. These plants to be utilized as vegetable fibres must undergo several operations before they are fit for spinning and weaving. In the present state of this art, the farmer who raises the plant is ex-

gift  
W.W. Rockwell  
9-1-48

## THE PRESENT AND FUTURE PERIL TO OUR COMMERCE AND INDUSTRY

By DR. HUGO SCHWEITZER

EVEN to the superficial observer of current events it must be apparent that Great Britain indeed "rules the sea," for her warships have put an effective end to all maritime commerce of the enemy. The German and Austrian merchant marines have disappeared from the seas, and as we have practically no merchant marine of our own, the United States is sustaining irretrievable losses. The cotton, copper, petroleum, etc., which supplied the German and Austrian factories with raw materials, as well as our food stuffs, cannot be carried to these countries so that to-day our commerce and our industries are suffering as much as if we were at war ourselves.

It is the object of this paper to show specifically some instances of the great losses which we are sustaining owing to interference with our trade, and to point out some of the perils which threaten our export trade with Germany and Austria in the future, when necessity will compel these countries to depend upon their own resources and to so develop their industries that they will be able to dispense with many articles which up to the present time were supplied by us in large quantities.

**COTTON.** Of the total amount of merchandise exported from here to Germany to the value of about \$352,000,000, \$175,000,000 consists of raw cotton. Germany has been making successful attempts to raise cotton in her colonies, and in 1913 she imported altogether 3,500,000 pounds from there, but this supply is of no use during war time, as it cannot be transported into Germany. As cotton itself, on account of climatic conditions, does not grow in any part of Germany or Austria-Hungary, substitute fibres, which can be cultivated on domestic soil, must be made available. Plants which give excellent fibres and grow in substantially every section of Germany and Austria-Hungary are flax, hemp and the various species of nettle.

Up to now the substitution of these fibres for cotton has not made any great commercial progress, mainly for the reason that the method for the production of the fibres was defective. These plants to be utilized as vegetable fibres must undergo several operations before they are fit for spinning and weaving. In the present state of this art, the farmer who raises the plant is ex-

SEP 29 1942 PM 1:10

pected also to attend to the subsequent treatment which is partly chemical and partly mechanical. This is as unreasonable as it would be to rely upon the modern farmer to furnish flour instead of wheat, or sugar instead of the sugar beet. Through the British interference with our exports Germany will be forced to seriously arrange for a permanent supply of fibres of which no one can deprive her. Then the cultivation of these will be carried out on an extensive scale, and factories equipped with proper machinery will be started, where the plants grown by the farmer will be treated according to the most modern methods which chemical and mechanical skill has devised to obtain the best results in the most economical manner.

### Substitutes for Cotton

Of the plants mentioned above, flax and hemp already furnish large quantities of a starting material for the manufacture of vegetable fibres. The flax plant—*Linum usitatissimum*—produces linen, but the linen industry, although well developed, has not made much progress in Germany of late, mainly for the above stated reason that the farmer was compelled also to attend to the after-treatment of the plant. Among the vegetable fibres linen, however, ranks next to cotton in importance and is stronger and more durable, and possesses a peculiar lustre; but being a better conductor of heat than cotton, it is not as suitable for wear during cold weather.

Hemp is the bast fibre of the hemp plant—*Cannabis sativa*—and undergoes the same after-treatment as linen. It is, however, a coarse fibre which does not compare favorably with linen and is seldom bleached and dyed.

To show how difficult it must be for the average farmer who cultivates flax or hemp plants to carry out the after-treatment necessary for the production of the fibres, a short description of these processes might be of interest.

**RIPLING.** After being pulled from the ground the plants are drawn through coarse iron combs which remove the seeds. These are used for the manufacture of valuable vegetable oils—linseed and hempseed oil.

**RETTING.** The bast fibres adhere very tenaciously to the woody part of the plant which makes the separation difficult and complicated. It is accomplished by the "retting operation," a species of fermentation. Retting may be carried out in stagnant or running water or by dew-setting, as well as by immersion in tepid or steam heated or acidulated water. These operations are followed by the mechanical process of "breaking" which facilitates the removal of the woody portion of the stem, this being accomplished by "scutching," by which the woody particles are beaten out either by hand or by machinery.

Finally the fibres are laid out parallel by "heckling," which means drawing the material in bundles first through coarse combs, and then through finer combs until it is in a suitable condition for spinning.

It is obvious that these operations are too complicated to be carried out properly by the average farmer. If, in spite of such a handicap, the flax and hemp industry, has reasonably prospered, it may rightly be inferred that it will be mightily developed by scientific processes executed in modern factories provided with the greatest chemical and technical skill.

Among the various species of nettle, the one botanically known as *Urtica dioica* L. is the most useful as a vegetable fibre. Prior to the introduction of cotton, the bast fibre of this plant was largely used in Europe for the manufacture of nettle cloth and nettle thread. As late as the beginning of the eighteenth century these fabrics were used all over the continent, in France, Spain, Sweden, Italy and Switzerland, and the last nettle thread factory, that in Leipzig, was not closed until the year 1820. The nettle plant is still in use to-day, especially in Russia, where the young plant is esteemed as a vegetable and the matured is utilized as fodder for cattle.

The conditions for raising nettle in Germany have been studied at great detail, especially by Mr. O. Lindemann of Lörrach-Baden. Sufficient is known to start the production of this fibre on any desired scale as soon as necessity arises. To replace the amount of cotton used in Germany and Austria-Hungary, it would be necessary to plant one German square mile (10,240 acres) with nettle. Such an area can be easily spared, for in spite of the careful exploitations of the soil there are still about 500 German square miles of unused but arable farm land at the disposal of the agriculturist for raising this group of vegetable fibre plants. It is known exactly what fertilizers, what condition of soil is necessary, how the seeds must be planted and when the crops must be harvested. The cultivation of nettle promises to be of especial importance, because the plant may be harvested twice a year, and being perennial, annual seeding is unnecessary.

The fibre of nettle greatly resembles that of flax, and if anything, is more durable than the latter. It can be easily treated chemically, that is, bleached and dyed. In conjunction with flax, hemp, and especially wool, it furnishes an absolute substitute for cotton in every branch of manufacture. Modern processes of refining textile fibres, such as, for example, mercerization which consists of a treatment of the fibre with strong alkali, permit of the production of far better nettle fibres which will bring them nearer to cotton fibre and render them superior to it for many uses.

The success of the nettle fibre industry is to-day entirely a

matter of organization. When this has been accomplished, the farmer who cultivates the plant will deliver his crop to the factory just as sugar beet growers are doing at the present time. In the factory, which will be run by scientifically trained chemists and engineers, the plant will undergo the necessary treatment to furnish the fibre. From this factory the fibre will be distributed to the various textile industries which will spin or weave it, or mix it with wool, hemp or flax, and which will also mercerize it, if desired. The thread, yarn and cloth, etc., thus obtained can then be used instead of the corresponding cotton fabric for the manufacture of wearing apparel, hosiery, etc. These are in every respect equal to cotton goods, and would be, if anything, cheaper, if produced on a large scale and under proper economical conditions.

Besides the fibre, the nettle plant would also furnish a valuable feed, because the leaves, after being suitably dried and ground, contain in 100 parts dry substance 35 per cent. albumen and 15 per cent. nutritive salts, of which 4 per cent. is phosphate of lime. A comparison with barley shows that the latter contains only 12 per cent. albumen and 3 per cent. nutritive salts.

The cultivation of the nettle plant would also increase the use of flax and hemp, as the mixing of their fibres with those of nettle would open up new avenues for the textile industry. A larger production of hemp and flax would have the additional advantage of augmenting Germany's supply of vegetable oils, as both the seeds of hemp and flax furnish very valuable members of this class which already enjoy great popularity in commerce and the industries. Moreover, the larger output of oils would give larger quantities of glycerin, which is produced from them by saponification and is in such great demand throughout the world.

Once started the prospects of the nettle industry would be almost boundless. Chemistry and botany would vie with each other to improve the plant and the fibre, and what possibilities are attainable in this respect appears from the fact that the sugar beet at the beginning of the industry contained barely 4 per cent. of sugar, while to-day the seed is so improved that beets with 22 per cent. sugar are harvested.

The fear is therefore justified that the present interference with our cotton trade may permanently injure our business in this commodity, not only with Germany but with the rest of the world.

What enormous losses our country suffers owing to the British disregard of our rights as neutrals is shown by the prices of cotton prevailing in Germany. According to a cablegram received at the Department of State from the American Embassy at Berlin on November 3rd, the supply of cotton was about sold out.

Small quantities of good middling were being quoted at 18.352c. per avoirdupois pound. How glad we would be if we could fill this demand at 12c. per lb.!

Perhaps our troubles in this regard may prove to be a blessing in disguise for the southern farmer. Perhaps he will now learn the lesson of cultivating diversified crops, especially cereals, and give up his steady devotion to cotton. The South may thus be forced into an involuntary era of prosperity just as the East Indian planters were, when the German chemist synthesized indigo and forced them to abandon the exclusive cultivation of this plant and to start raising cereals. This change, brought about by German science, seems to have almost abolished famines among the Indians, against which the British Government had been previously unable to take any effective measures.

### The German Potato as a Rival of American Wheat

WHEAT. Export to Germany in 1913, \$12,500,000. Germany has always been our second best customer for this article. If we cannot supply her demands owing to the British embargo upon the exportation of our wheat, Germany must make herself independent of our resources. As it will be impossible for her, while the war lasts, to obtain a supply from any continental country from which she might import merchandise, she will be obliged to find substitutes. Wheat is solely employed for flour making and baking purposes. It has been found that a mixture of 75 per cent. or 80 per cent. of its flour with 25 per cent. or 20 per cent. of potato meal lends itself well for bread making. This bread, now eaten everywhere in Germany, is excellent, and as far as its taste is concerned is superior to that made from wheat flour alone. By the substitution of potato meal Germany will get along without the importation of wheat from the United States, and on account of the excellent taste of the new bread, it may be assumed that after the war it will retain its popularity and our German wheat business will be gone forever.

This new use of potatoes naturally will severely tax the supply. But we must remember that potatoes constitute the main crop of the German agriculturist and enough are raised to furnish about four pounds a day all the year around per head of German population. If their use for the above purpose, however,

### Converting Waste Into Edibles

EDIBLE FATS. Germany imported from us altogether \$23,000,000 worth of fats, principally lard, for culinary purposes. The interference with our seaborne commerce through the action of the British Navy has suspended our trade with Germany in this commodity.

Fortunately for Germany, but unfortunately for us, a modern

development in the fat and oil industry has provided her with means to utilize materials which hitherto were unfit to eat.

By the so-called method of hardening fats and oils—that is, by treating them with hydrogen—they are not only converted from the cheaper *liquid* into the higher priced *solid* form, but their taste and odor are so improved that they might serve for culinary purposes, while without being subjected to the hardening process, they could not possibly be thus employed. Even the various grades of fish oil can thus be rendered available as food materials. Germany cannot possibly be cut off from the supply of these oils. The fisheries of the Baltic and the North Sea, of Norway and Sweden would place an inexhaustible and cheap source of fats and oils at the disposal of the German people, to whom an opportunity is thus afforded to remain forever independent of the import of edible fats from the United States.

By this hardening process even the waste fats (foots) obtained in refining can be utilized not only for soap making, but also for foodstuffs. In short, by suitable treatment with hydrogen, all oleaginous matter may be converted into edible substances.

## HOW THE AMERICAN MANUFACTURER IS AFFECTED BY THE WAR

### American Chemicals Used by Germany

**A** CETATE OF LIME. We export \$2,250,000 of this material to Germany. It is a very important article for us, as we practically monopolize the trade. It is used for the preparation of acetic acid and is produced as a by-product in the manufacture of charcoal. By heating wood above 230° C. distillation takes place, and the condensing vapors contain acetic acid together with a series of other organic substances. By collecting these compounds in milk of lime, more or less pure acetate of lime is formed which is filtered, dried, etc. From this impure article, pure acetic acid in its various degrees of strength is manufactured. The war has absolutely stopped the export trade in this commodity.

Acetic acid is of extreme importance in the chemical industries for the production of a very large group of chemicals, among them being the acetic acid derivatives of cellulose which are employed for the manufacture of non-inflammable films. Acetic ether, one of the conversion products, is also largely used in the manufacture of smokeless powder, especially that variety produced in small square scales. As vinegar acetic acid is found in every household.

It is therefore of the utmost importance for Germany to develop resources of her own to supply her requirements of acetic acid. A method to accomplish this object has been found in the oxidation of acetylene with the aid of an acid electrolyte or with peroxide compounds under the intermediate formation of acetaldehyde. Although perhaps not quite economical to-day, necessity might lead to the perfection of this method to such an extent that it might finally prove a cheaper way of producing acetic acid than the present one from imported acetate of lime which thus might be forever banished from our exportations.

As is well-known, acetylene is generated from carbide of calcium, which could be obtained from Norway and Switzerland and eventually might also be manufactured in Germany where the raw materials for carbide—coal and lime—are found in great abundance. By such a new development, Germany would remain safe from any future interruptions of the demands of her industries.

**PHOSPHATE ROCK.** In 1913 Germany imported \$3,000,000 of phosphate rock, being by far the largest importer. This material is used as phosphoric acid fertilizer and represents one of the most important items of export of some of our southern states. The British molestation of neutral shipping has absolutely killed this trade.

To overcome the danger of having her supply of this material, so important for her agriculture, cut off, Germany will now develop the hitherto neglected resources of her own land. There are numerous places in the valley of the Rhine and of the Lahn rivers where phosphate-containing rocks occur. These are not as rich as the Florida phosphate, but may be relied upon to replace a goodly quantity of the imported material. To supplement the output of phosphate fertilizer, Germany can utilize the slag obtained in the production of Thomas steel, called Thomas slag, which is already a well known fertilizer and will necessarily enjoy still greater popularity while England prevents us from shipping our product.

### Will the Teuton Find a Substitute for Copper?

**COPPER.** Of this metal, \$53,000,000 was exported in 1913 to Germany and Austria-Hungary. In her endeavor to monopolize the transoceanic commerce of the world, England declared copper contraband of war, and Germany and Austria-Hungary are unable to purchase the required amount from the United States, which is substantially the only exporter of this metal.

Aside from its employment in the manufacture of arms and ammunition, copper has innumerable uses in the arts. The largest part is used as wire for telegraph and telephones, for trolley lines and in general as conductor in long distance power



transmission. During the war there will be hardly any new installations for commercial telegraph and telephone lines. If there should be, steel wire could be employed for these purposes since it is equal in every respect to copper wire, except that special provisions for hanging have to be made on account of the heavier weight of the steel. In this way about 30 per cent. to 35 per cent. of the copper consumption of former years could be saved and might be eventually utilized for purposes of war.

For long distance power transmission and also for trolley lines, aluminum cable could be utilized to great advantage. The copper thus replaced could again be employed for arms and ammunition, and altogether by substitution of steel and aluminum, upwards of 50 per cent. of the consumption of copper in times of peace could be made available for war purposes. We must also bear in mind that Germany herself is a producer of copper, and that the Mansfeld mines furnish about 30,000 tons a year, which quantity can be easily increased by more intense working of the mines. In case of necessity, other deposits of copper in Germany might be utilized and this metal might also be imported from Norway which produces a considerable quantity. In extreme need Germany might rip up her hundreds of miles of tramway lines, replace the copper by aluminum and employ the enormous tonnage thus recovered for arms and ammunition.

Concerning the substitutes which Germany will be forced to employ with its supply of American copper cut off, it is well known that the iron ore deposits of Germany and consequently the output of steel wire are substantially inexhaustible. As far as aluminum is concerned, this can be imported from Switzerland or from Norway in sufficient quantities. Eventually aluminum might also be manufactured in Germany. Unfortunately, however, the starting material for its manufacture, the mineral bauxite, is at present found only in France and the United States. The importation of this mineral from France will probably stop during the war; while shipping from the United States might be interfered with by England. Fortunately, there exists a process which furnishes a material which can be produced in very large quantities. This substance, when used for the production of aluminum, would constitute an interesting and very profitable part of a series of manufacturing operations that, without this outlet for aluminum, would not be feasible economically. Such an opportunity is offered by the so-called Serpek process of utilizing nitrogen from the air. This process consists in heating bauxite—the impure mineral form of oxide of aluminum—and carbon in a nitrogen atmosphere. The result of this reaction is the formation of nitride of aluminum and of pure oxide of aluminum. The former furnishes ammonia.

The inventor of this ingenious process originally thought that

the oxide of aluminum obtained as a by-product in his main reaction could be used over again instead of the bauxite in the first step of his operation. However it was found that this oxide of aluminum was unsuitable for the Serpek process because—curious to say—it was too pure and thus offered great resistance to its conversion into nitride of aluminum. On the other hand, it was determined that it lent itself excellently to the manufacture of aluminum by the usual method. But such enormous quantities of this pure oxide of aluminum are obtained in the Serpek process that the correspondingly large quantities of aluminum which could be produced from it, would surpass all the demands hitherto known for this metal. If, however, aluminum could be employed extensively as a substitute for copper, the Serpek process might become economical. Especially would this be the case if this process, which furnishes ammonia as the principal product, could be combined with the Birkeland-Eyde process or its modifications of utilizing nitrogen from the air, with the formation of *nitric acid*. We would then have the following interesting operation:

#### Processes That May Found a New Industry

We would first prepare pure nitrogen and pure oxygen from liquid air according to the well known processes of Linde, Hildebrandt or Claudet, etc. The nitrogen thus generated would produce ammonia, in which would be collected the nitric acid formed according to the Birkeland-Eyde process, furnishing as the end result, nitrate of ammonia,—the ideal nitrogen fertilizer. In the Birkeland-Eyde process, oxygen is necessary for the conversion of the nitrogen from the air into nitrous gases which is accomplished by combustion of the air. If this combination is carried out by utilizing the pure oxygen which has been originally separated from the liquid air as described above, the reaction is very favorably influenced and large yields are obtained. The pure oxide of aluminum, as stated before, will serve for the manufacture of the metal aluminum. The finished products of this readjustment of manufacture necessitated by the substitution of aluminum for copper would, therefore, be nitrate of ammonium or nitric acid and ammonia and aluminum metal.

But this new development might be impossible, while the war lasts, if the Serpek process would depend on bauxite as a crude material. Fortunately, however, this process in its first step, the production of nitride of aluminum, is a refining process for oxide of aluminum, and it has been found that the pure French and American bauxites are not absolutely necessary for the reaction, but that less valuable deposits found, for example, in Dalmatia, in Austrian territory, may be employed. It is also expected that kaolin or ordinary clay, which chemically are silicates of

aluminum, might be available as starting materials for the Serpek process, and if these hopes are realized and a larger outlet is found for metallic aluminum, the prospects for this process would become most excellent.

### **Uncle Sam Exports Ten Million Dollars' Worth of Nickel Every Year to Germany**

**NICKEL.** Of the total export of about \$10,000,000 of metallic nickel obtained by refining Canadian ore in domestic plants, Germany takes the largest part. To satisfy the demands of their industries, Germany and Austria-Hungary will now be obliged to turn to the development of their native resources and to open up some mines in Hungary, where a rather poor nickel ore is found. Deposits of such ore have also been discovered in Upper Italy and Norway.

In the case of nickel and many other minerals and manufactured articles it has up to now been easier and perhaps cheaper for Germany to import them than to go to the trouble and expense of developing domestic resources. But when necessity once enforces readjustments of this kind, there is great danger that the newly worked mines may develop into something better than originally anticipated and may thus lastingly injure our trade.

### **United States Oil Makes German Machines Go**

**PETROLEUM.** Germany imports from us about \$10,000,000 worth of illuminating oil, lubricants and paraffin. Her supply of benzine apparently comes from the Roumanian, Galician and Russian oil fields.

Large quantities of kerosene are used as motorspirit, either in admixture with benzine or coaltar benzol. To replace petroleum for illuminating purposes Germany has at her disposal grain alcohol, which in the form of denatured alcohol, and used in especially constructed burners, offers a cheap illuminant of domestic production. Carbide of calcium and acetylene gas obtained therefrom may be largely utilized in addition to electric light, which, although the most expensive method, is always available and will ever be so on account of the vast wealth of coal which Germany possesses.

To replace petroleum as motorspirit, Germany employs coaltar benzol, which is recovered in large quantities in the coking of coal, that is, suitable heating of coal. Denatured alcohol also serves this purpose in carbureters adapted for this substance.

To replace petroleum as lubricant there are available the paraffin oils, cylinder oils, etc., obtained by the distillation of lignite coal, an industry already established but hitherto kept down by the competition of the American petroleum products.

Deposits of lignite are very common all over Germany and this industry may be very largely expanded. It also furnishes benzol and illuminating oil which together with the supplies from Roumania and Galicia, may make Germany herself entirely independent of our resources.

In this connection, it must also be considered that the latest improvements in Diesel motors permit the use of even heavy coaltar oil as fuel for these wonderful gas engines. This means a further reduction of the German consumption of our petroleum products.

As stated before, the available substitutes, coaltar benzol, and distillation products of lignite can always be produced in large quantities in Germany.

Concerning the manufacture of denatured alcohol, there are many waste materials which might be profitably utilized for the preparation of grain alcohol. The fermentation of beet sugar molasses or of the refuse of fruits, vegetables, etc., in the preserving industries might furnish additional quantities of alcohol. The new method of making alcohol from sawdust and wood-waste has already been mentioned as a further source.

Even the sugar beet itself might be largely submitted to fermentation processes instead of serving for the production of sugar, because it will be impossible for Germany to export much of this article while the war lasts.

Perhaps, the inland sugar consumption may also decrease because the authorities have raised the restrictions against the use of saccharin in order to provide a cheap sweetener for the home preserving industry, which the government has been so strongly urging for the conservation of the immense fruit crop with which Germany has been blessed this year.

Saccharin is also to be made a part of the iron fund of necessities carried by the soldier in his knapsack. Experience in the field has shown that soldiers cannot always procure sugar for their tea and coffee, and as these beverages are not enjoyed unsweetened, a small box containing saccharin tablets is to be provided.

All this proves again what has always been claimed that the prohibition against saccharin was not a sanitary measure dictated by the necessity for guarding the health of the people, but had for its object the protection of beet sugar against the much cheaper chemical. The government realized that from an economical point of view the beet sugar industry with its diversified interests was of greater importance to the state than the manufacture of saccharin which required only a few laborers, but produced an article of which four pounds equalled in sweetness one ton of sugar. Of course, everyone realizes that sugar, besides being a flavoring agent, is an important food stuff, while sach-

arin is simply a sweetener and entirely devoid of nutritive properties.

The illustrations given above will show what new conditions have been imposed upon our commerce and industries and what readjustments will take place in Germany and Austria-Hungary owing to the interference with our trade on the part of Great Britain. Even in a country so highly developed industrially as Germany, there are still resources locked up and materials wasted and neglected which if properly utilized may make that nation independent of importations from abroad and may thus considerably affect our own prosperity. Notwithstanding that this fact has been adequately demonstrated in this paper, permit me in conclusion to cite a very significant example of such waste.

The yeast of the fermentation industries, of which Austria-Hungary alone produces about 30,000,000 tons, has been allowed to run to waste, although it represents a nutrient of highest value. Compared with beef it possesses three times the caloric value calculated at the same price. Its composition compared with beef is as follows:

Yeast: 54 per cent. albumen, 3 per cent. fat, 28 per cent. extractive substances free from nitrogen and 8 per cent. of water.

Beef: 21 per cent. albumen, 5.5 per cent. fat, 0 per cent. extractive substances free from nitrogen and 72 per cent. of water.

The albumen contained in the yeast corresponds to meat albumen and not to the albumen contained in vegetables, and yeast albumen is therefore a direct substitute for meat.

It may be employed as an addition to soups, sauces and stews and is altogether an excellent dietetic food for underfed and convalescent people. Except its use at present by the German military administration for soup-conserves and as a strengthening addition to the soldier's bread, this valuable material produced in such immense quantities is totally discarded.

During the war the breweries of Austria-Hungary have decided to furnish their yeast gratis to the population. As the entire production of this yeast in the world is about 2,000,000 tons we are wasting here a foodstuff equivalent in its caloric value to 6,000,000 tons of beef.

The thought occurs whether in these times of high cost of living we ourselves might not profitably utilize this waste material of our breweries and distilleries?

### How the Importers Have Suffered

Besides interfering with our *exportation* of domestic merchandise, England has succeeded in destroying our *importations* of articles such as potash salts, cyanide of potassium, seeds of sugar beet, dyestuffs, etc., of which our agriculture, our mining and textile industries are so badly in need and of which Ger-

many is the only country producing quantities sufficient for the world's trade.

But our industries sustained the worst check by the proclamation of the wool embargoes on the part of the British Government. England placed such large orders here for supplying her armies with clothing as to practically clean out our woolen mills of certain grades of raw materials, while English and Canadian buyers at the same time bought out our raw wool supply.

Furthermore—and this shows the maritime power of Great Britain better than any other example—British vessels were forbidden by their government to carry wool from Argentina and Uruguay to any country—nations at war or neutrals—save England.

This accomplished, England placed an embargo on raw wool, excepting the short and fine sort from South Africa which is unsuitable for military clothes.

By these ingenious methods England prevents our textile industries from getting various grades of their most important raw material—wool. Our mills will be unable to manufacture certain classes of goods for the domestic trade, and they will also lose the chance—which we hailed with so much joy—of supplying England and her allies with military goods because she will own all the raw wool needed for their production.

On the other hand, the British magnanimously permit and encourage the exportation from their own country of manufactured articles, such as woolen yarns and clothes of all grades, excepting those suitable for military purposes. This results in the continuance of heavy exports of woolens from the Bradford district, and the American consumer will thus be forced to use English made goods, thereby increasing the foreign trade of Great Britain which has cunningly contrived to destroy our own manufacturing.

Even our charitable ladies who are engaged in knitting various articles for British soldiers which their own government ought to buy for them, pay in every stitch tribute to the wily trader of England who uses the war to strangle the business of his rivals and to monopolize forever the oversea commerce of the world.

By adding together the export trade of the few items specifically given above we find that our trade—to the round sum of \$300,000,000—is in danger of being destroyed by England's seapower, meaning a loss of about \$1,000,000.00 a day to the farmer, the working man and the capitalist of our country.

410 RIVERSIDE DRIVE, NEW YORK, N. Y.

26072

**END OF  
TITLE**